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## VOLUME 3. AIR OPERATOR TECHNICAL ADMINISTRATION

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### CHAPTER 7. AVIATION WEATHER INFORMATION SYSTEMS

#### SECTION 4. SOURCES OF WEATHER INFORMATION

**1439. GENERAL.** Title 14 of the Code of Federal Regulations (14 CFR) Parts 91, 121, and 135 require certificate holders to use weather reports and forecasts from specified sources. Pilots and other persons responsible for operational control must have enough weather information to determine whether a flight can be accomplished in compliance with 14 CFR. Weather information systems must provide all weather information required by 14 CFR.

#### **1440. REGULATORY REQUIREMENTS SOURCES OF WEATHER REPORTS.**

*A. Weather Reports.* For all operations conducted under Parts 121 and 135, weather reports either must be prepared by the National Weather Service (NWS) or by sources approved by the NWS or Federal Aviation Administration (FAA). The term “weather report” as used in 14 CFR and this order primarily refers to a surface aviation weather report (SA) as described in Advisory Circular 00-45 (as amended), Aviation Weather Services, section 2, Aviation Routine Weather Report (METAR). Forecasters use surface aviation weather observations as the basis for predicting future weather conditions. Any forecast used to control flight movement must be prepared from (based on) weather reports prepared by the NWS or other approved sources.

*B. Weather Information Required in Reports Used to Control Approaches and Departures.* All Part 121 and Part 135 operators must use approved sources of weather reports of meteorological conditions at any airport where instrument flight rules (IFR) departures or approaches are conducted. An approved source may rely on specifically approved automated observation equipment for some or all of the required weather information. When a Part 121 or Part 135 operator is required to use a weather report, the report must contain at least the following meteorological

information.

- Time of observation
- Visibility
- Altimeter setting
- Temperature
- Dew point
- Wind speed
- Wind direction
- Cloud height (required only when ceiling is specified as part of a landing or takeoff minimum)

*C. Part 121.* Part 121 requires operators conducting operations within the 48 contiguous States to use weather reports prepared by the U.S. NWS or sources approved by the NWS. Although Part 121 does not specify that weather reports prepared or approved by the NWS must be used in Alaska, Hawaii, and U.S. territories, it is FAA policy that weather reports prepared or approved by the NWS must be used by all Part 121 operators in areas where NWS services are available. When operating outside the 48 contiguous United States where NWS services are not available, Part 121 domestic and flag operations must use weather reports prepared by sources approved by the FAA. Additionally, under 14 CFR section 121.101(c), certificate holders are permitted to use forecasts prepared from weather reports made by any source approved under an Adverse Weather Phenomena Reporting and Forecasting Subsystem established in compliance with CFR 121.101(d). Supplemental operations outside the U.S. require the use of weather reports produced by sources found satisfactory by the FAA in accordance with section 121.119. Any Part 121 visual flight rules (VFR) operation must be based on weather reports prepared by the NWS, sources approved by the NWS, or sources approved by the FAA.

*D. Part 135.* Whenever a Part 135 operator is required to use a weather report or forecast for IFR operations, the operator must use weather reports or forecasts prepared by the NWS, or a source approved by the NWS. Where NWS services are not available, the source must be approved by the FAA. If NWS or other approved reports are not available for VFR operations, a pilot in command (PIC) may use weather information based on his own observations or on those of other competent persons. For this purpose, the FAA considers certificated commercial pilots, airline transport pilots, dispatchers, air traffic controllers, and trained weather observers competent to provide weather information for Part 135 VFR operations.

**1441. SOURCES OF NWS WEATHER REPORTS OR SOURCES APPROVED BY NWS.** Sources of NWS weather reports or sources approved by the NWS are as follows:

- NWS offices (including contract observatories)
- Flight service stations
- Supplemental aviation weather reporting stations (SAWRS) (These facilities are usually operated by an aeronautical enterprise or a local government under an agreement with the NWS.)
- Limited aviation weather reporting stations (LAWRS) (These are observations taken by airport traffic control towers.)
- Automated surface observations (These include a variety of systems generally known as automated weather observation systems (AWOS))

**NOTE:** These systems may be approved as a source of meteorological data when they meet FAA/NWS technical standards. Some automated systems cannot report all items for a surface aviation weather report. As a result, the reports generated from such systems cannot be used in lieu of either a complete surface aviation weather report made by: SAWRS, LAWRS, an NWS office, or a flight service station; or, a complete surface aviation weather report generated from an AWOS capable of producing a complete report. See paragraph 1447.

**1443. SOURCES OF WEATHER REPORTS APPROVED OR FOUND SATISFACTORY BY THE FAA.**

A. The following sources of weather reports are automatically approved or considered satisfactory

without any further specific evaluation by FAA inspectors. However, if an inspector becomes aware of repeated inaccuracies in weather reports from any of these sources, the inspector is responsible for reporting the inaccuracies. All reports of inaccurate weather reporting from any source must be forwarded to AFS-400. The sources in the following list may be used by part 121 or 135 operators:

- Any source listed in paragraph 1439
- Any active meteorological office operated by a foreign state which subscribes (is signatory) to the standards and practices of ICAO conventions

**NOTE:** These meteorological offices are normally listed in the MET tables located in ICAO Regional Air Navigation Plans. The Aeronautical Information Publication (AIP) of individual states also lists active meteorological offices for that state.

- Any U.S. or NATO military weather reporting sources

*B. Public Internet.* If a part 121 or 135 operator obtains aviation weather and notices to airmen (NOTAM) data via the Public Internet, the operator must use an approved Qualified Internet communication provider (QICP). A current list of QICPs is established and maintained by the FAA Aerospace Weather Standards Division (ARS-200), on a designated Internet Web page that is accessible by the general public. The use of an approved QICPs is authorized through the issuance of OpSpec A010.

**1445. SOURCES OF WEATHER REPORTS USED IN PREPARING ADVERSE WEATHER PHENOMENA FORECASTS.** Any source of weather reports used in an approved Adverse Weather Phenomena Reporting and Forecasting subsystem to prepare forecasts of adverse weather, or to control flight movements during such conditions may also be approved (by POIs) for use in preparing forecasts to control flight movements during ordinary weather conditions (the absence of adverse weather phenomena). These types of sources include all of those listed in paragraphs 1439 and 1441 and any other near real time reports such as PIREPS, Radar reports, Radar Summary Charts, and satellite imagery. Additionally, reports made by commercial weather sources or other sources specifically approved under an Adverse Weather Phenomena Reporting and Fore-

casting subsystem may also be used to control flight operations.

#### **1447. SOURCES OF WEATHER FORECASTS.**

Any source listed in paragraphs 1439 and 1441 which prepare forecasts may be used by parts 121 and 135 operators to control flight operations. These are the only sources of forecasts which can be used by part 121 or part 135 operators who do not have approval to use an EWINS. An approved EWINS may acquire meteorological data (including forecasts) from any source and may consider that data when preparing and issuing reports and forecasts for controlling flight operations. The reports and forecasts from sources listed in paragraphs 1439 and 1441 are the basis for preparing forecasts issued by an EWINS. Additionally, reports and forecasts produced by or acquired from commercial weather services may be used by an EWINS to prepare flight movement forecasts (FMF). There is no restriction on the use of meteorological data from any source which verifies the accuracy of forecasts made by an EWINS. Sources which are not usually associated with aviation weather information systems may be used as secondary sources of weather data for an EWINS. Examples of such sources include commercial television station weather radar, local radio, or television weather broadcasts. When preparing and issuing flight movement forecasts, any pertinent meteorological information should be considered for use in an EWINS regardless of its source. When a part 121 or part 135 operator is authorized to use an EWINS, the EWINS replaces all other sources of forecasts used to control flight operations. When an air carrier gets its weather information via the Public Internet, the provisions of paragraph 1153C must be followed for a QICP.

#### **1449. AUTOMATED WEATHER REPORTING SYSTEMS.**

A. In 1978, Advisory Circular (AC) 91-54, Automatic Reporting Systems - Altimeter Setting and Other Operational Data, established guidelines for the development and installation of automatic reporting systems which provide altimeter settings and other operational data for use in IFR and VFR operations. The FAA has used AC 91-54 as the basis for approval of several commercially developed automatic reporting systems which provide altimeter setting, wind speed and direction, temperature, and dew point, (the basic elements which constitute the current AWOS-1). A limited number of systems installed and operated under the guidelines of AC 91-54, along with

the specific authority of the administrator were approved for Part 135 operations. Use of these systems for Part 121 operations were not approved because the AC 91-54 systems were not sanctioned by the NWS. Basic AC 91-54 systems, however, may be used by Part 121 and Part 135 operators as a source of data for a supplementary aviation weather reporting station (SAWRS). Since SAWRS are NWS-certified observing stations, those AC 91-54 systems used as a basic data source for a SAWRS are certified and monitored by the NWS. Airports operating commercial automatic reporting systems implemented under the AC 91-54 guidelines are listed in the Airport Facility Directory.

**NOTE: Automatic reporting systems developed and installed in accordance with AC 91-54, and operated as independent, single source reporting systems do not satisfy the requirements of Part 121 and Part 135 for official aviation weather reports. This type of system is approvable only as a source of basic data for a SAWRS.**

B. Second generation automated weather observing systems include the automated weather observing system (AWOS) and the NWS-operated automated surface observation system (ASOS). The AWOS is produced in three categories (or levels) that are determined by the number of weather parameters the system measures. The basic system, AWOS-1, measures wind speed and direction, temperature, dew point, altimeter setting, and density altitude. AWOS-2 adds visibility, and AWOS-3 adds visibility and cloud height. ASOS is deployed in a variety of configurations and operated by the NWS at both manned and unmanned locations. Aviation safety inspectors should refer to the Airman's Information Manual (AIM), Chapter 6, Meteorology Section and the Airport Facility Directory, for the most current information about automated weather observation systems.

*FYI: FAA-owned and operated AWOS-2 and AWOS-3 systems are approved sources of weather for Part 121 and Part 135 operations.*

*FYI: NWS-operated automated surface observation systems (ASOS) are approved sources of weather for Part 121 and Part 135 operations.*

C. In AC 150/5220-16 Automated Weather Observing Systems (AWOS) for Nonfederal

Applications, FAA standards are established for nonfederal automated weather observing systems. This AC provides interim guidance for installation, operation, and maintenance of nonfederal systems. Amendment of Subpart K of Part 171, Nonfederal Navigation Facilities, when adopted, will supersede and cancel AC 150/5220-16. State and municipal airport authorities, private aviation entities, and private airport operators who have acquired and operated automated systems established under the guidelines of AC 150/5220-16 may continue to operate those systems. AWOSs established, operated, and maintained in accordance with AC 150/5220-16 and Subpart K of Part 171 are NWS-approved weather sources for Part 121 and Part 135 operation. Principal operations inspectors (POI) may approve use of nonfederal AWOS-2 systems on a case by case basis. The systems must be identified or referenced in paragraph A010 of the certificate holder's operations specifications.

**NOTE: Automated reporting systems implemented under the guidelines of AC 91-54 may be approved as weather sources for Part 121 and Part 135 operations only when upgraded to meet the newer standards established in AC 150/5220-16 and Subpart K of Part 171.**

D. The following is a summary of FAA guidelines on approval of AWOS.

*(1) Approval and Use of Federally Owned and Operated AWOS.*

(a) Automated observing systems installed, operated, and maintained by the NWS are approved for use without restriction by Part 121 and Part 135 operators.

(b) AWOS-1 installed, operated, and maintained by the FAA are approved as sources of basic weather data for a SAWRS.

(c) AWOS-2 installed, operated, and maintained by the FAA are approved for use by Parts 121 and 135 operators subject to the limitations described in D(2)(c) of this paragraph.

(d) AWOS-3 installed, operated, and maintained by the FAA are approved, without restriction, for use by Part 121 and 135 operators.

*(2) Approval of Nonfederally Owned and Operated AWOS.*

(a) Automated systems installed and operated as independent systems under the guidelines

of AC 91-54 are not approvable for Part 121 and Part 135 operations. This type of system may be used only as a basic source of weather data for a SAWRS.

(b) AWOS-1 installed, operated, and maintained under the guidelines and specifications in AC 150/5220-16 or Subpart K of Part 171 are not approvable for Part 121/135 operations when operated as an independent system. This type of system may be used as a basic source of weather data for a SAWRS.

(c) AWOS-2 that meet the criteria of AC 150/5220-16 or Subpart K, Part 171 are approved for Part 121 and Part 135 operations with the following limitations:

- An IFR operation which requires ceiling information as a condition for conducting that operation is not permitted at airports where AWOS-2 reports are the official source of weather information
- AWOS-2 airports cannot be used for alternate airports based solely on AWOS-2 reports (no cloud height information)
- AWOS-2 reports may not be used as the sole basis for determining if VFR conditions exist at airports without operational control zones
- POIs must examine each request for approval for AWOS-2 operations and are authorized to impose any additional limitations determined necessary
- At airports where ceiling information is required to comply with nonstandard takeoff minimums dictated by Part 97 or operations specifications, IFR takeoffs are prohibited if an AWOS-2 is the sole source of weather information.

**NOTE: At airports where a climb gradient alternative is specified, however, this restriction would not apply to aircraft capable of meeting climb gradient criteria.**

(d) AWOS-3s installed, operated, and maintained in accordance with the standards and specifications in AC 150/5220-16 or Subpart K of Part 171, are approved without restriction for use by Parts 121 and 135 operators.

*FYI: An AWOS that complies with the standards and specifications of AC 150/5220-16 is approved automatically by the NWS as an official source of aviation weather reports. Technical approval of the system by Flight Standards is not required. Operational applications are to be addressed by Flight Standards in accordance with the policies in this section.*

*FYI: The AWOS is a modular system that has a built-in self-checking capability. Each measured weather element has certain error tolerances that are an integral part of the operating software. This characteristic, coupled with appropriate data processing algorithms designed to withhold out of tolerance measurements, allows the AWOS to continue to function while an element or elements are reported missing. An AWOS cannot be used as an authorized weather source for Part 121 and Part 135 IFR operations if the visibility is*

*reported missing. IFR approaches will not be initiated by Part 121 and 135 aircraft when visibility is missing from the AWOS report. An AWOS is out of service for all IFR approaches if the altimeter setting is reported as missing.*

*FYI: Operations inspectors should be aware that nonfederal AWOSs installed under the guidelines of AC 150/5220-16, as part of the certification and commissioning process, are required to have an established and continuing maintenance program. Inspectors conducting facility inspections at locations where a non federal AWOS is the official weather source, should review the AWOS maintenance documentation at those locations to ensure that periodic maintenance checks are being performed.*

**1450 - 1452. RESERVED.**

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